

been proposed or are candidates for listing. Species that are likely to become candidate or proposed species in the near future may also be included in a conservation agreement.

Utah Wildlife Sensitive Species (Utah Administrative Rule R657-48)

Wildlife species that are federally listed, candidates for listing, or for which a conservation agreement is in place automatically qualify for the Utah Sensitive Species List (Utah Division of Wildlife Resources 2006). Additional species on the list are those for which there is credible scientific evidence to substantiate a threat to continued population viability in Utah. Sensitive species designations are intended to promote conservation actions that would ultimately prevent the species from being listed as threatened or endangered under the ESA. The Utah Division of Wildlife Resources (UDWR) is the state agency responsible for monitoring WSCs.

3.15.2 Affected Environment

3.15.2.1 Description of Special-Status Species

Only the special-status species that occur or could occur in project and regional study areas are discussed in relationship to the project corridor. No further discussion is included in this EIS for the clay phacelia, deseret milkvetch, bluehead sucker, Bonneville cutthroat trout, black swift, greater sage grouse, brown (grizzly) bear, Canada lynx, California floater, desert valvata, or Eureka mountain snail because they do not occur in habitat or geographic areas that could be affected by project activities.

Ute Ladies'-tresses (Spiranthes diluvialis)

Ute ladies'-tresses is a perennial, terrestrial orchid with stems 8–20 inches tall, arising from tuberously thickened roots. The species is characterized by whitish, stout, ringent (gaping at the mouth) flowers. It generally blooms from late July through August (U.S. Fish and Wildlife Service 2004). Populations of Ute ladies'-tresses have been documented in north-central and western Utah and portions of Colorado, Idaho, Montana, Nebraska, Nevada, Washington, and Wyoming (Utah Division of Wildlife Resources 2007b). It occurs along riparian edges, gravel bars, old oxbows, high flow channels, and moist to wet meadows. It typically occurs in stable wetland and seep areas associated with old landscape features within historical floodplains of major rivers. It also can be found in wetland and seep areas near freshwater lakes or springs.

The Ute ladies'-tresses has been reported from 14 locations in Utah County, including locations near the project vicinity in Lehi, American Fork, Springville, Spanish Fork, and Payson (Fertig et al. 2005; HDR 2007). These populations were reported to occur in wet meadows, usually in floodplains, between 4,490 and 5,460 feet in elevation. However, two project-level pedestrian presence/absence surveys of wet meadow habitat along the I-15 Corridor detected no Ute ladies'-tresses within the project study area. Therefore, the species is presumed to be absent from the project study area.

June Sucker (Chasmistes liorus)

The June Sucker is endemic to Utah Lake and its tributaries, although it has been introduced into other lakes for genetic reserves. The June Sucker was listed by USFWS as a federally endangered species on March 31, 1986 (51 Federal Register [FR] 10851). Critical habitat was designated at the same time, consisting of the lower 4.9 miles of the Provo River from the Tanner Race Diversion downstream to Utah Lake. Spawning only occurs in the Provo River at present, but also occurred in the Spanish Fork River and possibly in Hobble Creek. June Suckers are a long-lived fish (9–43 years) and can grow up to 24 inches. Young June Suckers prefer to use aquatic vegetation for cover; however, there is currently insufficient aquatic vegetation in the Provo River for adequate cover. The June sucker is most likely a mid-water planktivore and they are both discriminate and opportunistic feeders. Post-spawning adults inhabit all areas of Utah Lake, but most likely use the shallow habitat over deep-water habitat. June Suckers are potadromous (i.e., they migrate in freshwater systems, rearing in the lake and spawning in the river). The proposed project area crosses the Provo River within USFWS-designated June Sucker critical habitat.

Leatherside Chub (Gila copei)

Leatherside chub is a minnow native to Utah Lake and the Provo River, often used for bait by fishermen. The name is derived from its skin, which has a leathery texture. Adults measure 3–5 inches in length and live no longer than 5 years. Although their ecology is not well known, it is assumed that they feed on drift organisms, algae, and aquatic insects. Leatherside chub most likely spawn from June to August, when water temperatures are between 60 and 68°F. Adults inhabit pools and riffles or cool creeks and rivers, while young live in quiet waters, including where water is slowed down by brush. Dominant substrate is gravel but may also contain sand, cobble, and silt (Sigler and Sigler 1987). Leatherside chub has most likely been extirpated from the lower reaches of the Provo River¹ and is not known to occur within the project study area.

Bald Eagle (Haliaeetus leucocephalus)

The Bald Eagle was removed from the list of threatened and endangered species on July 9, 2007 (72 FR 37346). USFWS will monitor the Bald Eagle population status for a minimum of 5 years after delisting, as required by the ESA. The Bald Eagle will continue to be protected under the MBTA and the BGEPA. Bald Eagles are common winter visitants but rare summer breeders in the regional study area. Bald Eagles are opportunistic feeders that forage on carrion and prey on a variety of mammals, birds, reptiles, amphibians, and crustaceans. However, they generally prefer fish, when available, to other food types (Buehler 2000). Bald Eagles eat a great variety of fish; aquatic and terrestrial mammals, including muskrats, jackrabbits, and ground squirrels; and many species of waterfowl, gulls, and even Great Blue Herons (Buehler 2000). Foraging habitat for Bald Eagles occurs within the project study area. Utah Lake, especially along the shore and in delta bays, and the Jordan River provide good habitat for Bald Eagles to prey on a variety of fish, including carp, suckers, and catfish.

Yellow-billed Cuckoo (Coccyzus americanus occidentalis)

The taxonomy of Yellow-billed Cuckoo subspecies is currently being debated. Most authors have recognized both an eastern (*Coccyzus americanus americanus*) and western (*C. a. occidentalis*) subspecies (American Ornithologists' Union 1957). Only the Western Yellow-billed Cuckoo occurs in Utah (Behle and Perry 1975). The Yellow-billed Cuckoo in the western United States is classified as a federal candidate species (67 FR 71193, 71194). Yellow-billed Cuckoos historically bred along the riparian corridors of the Great Salt Lake Basin (U.S. Fish and Wildlife Service 2002). The Jordan River and delta once provided large areas of habitat suitable for cuckoos (Utah Division of Wildlife Resources 2003). However, habitat loss and fragmentation from dewatering, stream channelization, encroachment by non-native tamarisk, grazing, and oil and gas development have removed most of this species' historical habitat. The current breeding range for Yellow-billed Cuckoos in Utah includes Salt Lake, Tooele, and Washington counties. Preferred breeding habitat in this area includes riparian woodlands characterized by willow, Fremont cottonwood (*Populus fremontii*), and dense mesquite (Walters 1983; Hughes 1999). Nests are commonly placed in willows, but cottonwoods are used extensively for foraging. Migrant Yellow-billed Cuckoos may rest and forage in human-modified habitats, including fruit orchards and suburban/urban/rural shade trees and gardens. The principal foods of this species are large insects, including caterpillars, cicadas, grasshoppers, and crickets (Hughes 1999). Small frogs, eggs and young of other birds, and fruit and seeds are also eaten on occasion. Nesting and foraging habitat for the Yellow-billed Cuckoo occurs within the regional study area.

Northern Goshawk (Accipiter gentilis)

The Northern Goshawk occurs as a permanent resident throughout Utah but is not common in the state. Northern Goshawks are rare migrants in the project study area but are more abundant in the higher forested reaches of the watersheds of Utah Lake, the Great Salt Lake Basin, and elsewhere in Utah. Ryser (1985) noted that in the Great Basin Physiographic Province, during winter, there is some altitudinal migration of goshawks from mountain forests

¹ Wilson, Krissy. Aquatic Biologist, Utah Department of Natural Resources, Division of Wildlife Resources. Telephone conversation regarding fisheries resources in the project area—October 5, 2004.

into the foothills and valleys, as well as immigration of individuals into the Great Basin from the north. Goshawks have been observed foraging in open sagebrush areas in Nevada, where they prey on ground squirrels (Younk and Bechard 1992). Also, wintering goshawks use cottonwood riparian areas in the Rocky Mountains and Intermountain Region (Squires and Ruggiero 1995), as well as adjacent open areas (Hughes 1999). Northern Goshawks prey mostly on large passerine birds, grouse, woodpeckers, corvids, squirrels, rabbits, and hares (Squires and Reynolds 1997). Foraging habitat for the Northern Goshawk occurs within the regional study area.

Ferruginous Hawk (Buteo regalis)

Ferruginous Hawks breed in western North America, from south-central Canada to northern Utah and New Mexico (Olendorff 1993). The species winters primarily in grasslands and shrub steppes in the western and central United States, as well as in Mexico. These hawks typically occur in flat and rolling terrain in grassland or shrub-steppe regions (Bechard and Schmutz 1995), including grasslands, sagebrush country, saltbush-greasewood shrublands, and along the periphery of western pinyon and other forests (Olendorff 1993). Nest sites tend to be at elevated sites such as boulders, knolls, low cliffs, trees, large shrubs, and utility structures. While foraging, these hawks commonly perch in trees; on telephone and power line poles, farm buildings, fence posts, or outcrops; or on the ground. Their principal prey includes jackrabbits, cottontail rabbits, ground squirrels, and gophers (Olendorff 1993; Bechard and Schmutz 1995). Foraging habitat for Ferruginous Hawk occurs within the regional study area.

Long-billed Curlew (Numenius americanus)

Long-billed Curlews are uncommon breeders and common migrants in the regional study area. They typically forage in higher and drier meadowlands than many other shorebirds, preferring areas with mixed short grass cover and bare ground components. Long-billed Curlews breed or forage in shallow open water, cropland, pasture, and wet meadow habitats. Uncultivated rangelands and pastures, as well as rice and alfalfa fields, support most of the Long-billed Curlew populations throughout the western United States (Dugger and Dugger 2002). Curlews feed on a variety of crustaceans, mollusks, worms, frogs and toads, insects, and berries. Foraging habitat for the Long-billed Curlew occurs within the project study area.

Lewis' Woodpecker (Melanerpes lewis)

Lewis' Woodpeckers are uncommon permanent residents in Utah. Although it has been functionally extirpated from much of its historical breeding range along the Wasatch Front, the species is occasionally observed in the regional study area. Three principal habitats are open ponderosa pine forest, open riparian woodland dominated by cottonwood, and logged or burned pine forest. However, breeding birds are also found in oak woodland, nut and fruit orchards, pinyon pine-juniper woodland, a variety of pine and fir forests, and agricultural areas, including farmland and ranchland. Important aspects of breeding habitat include an open canopy, a brushy understory offering ground cover and abundant insects, dead or downed woody material, available perches, and abundant insects. Their diet during the warmer months consists largely of flying insects caught during flight. During colder months, their diet shifts to nuts, grains, and berries.

American White Pelican (Pelecanus erythrorhynchos)

A breeding colony of American White Pelicans occurs on Gunnison Island in the north arm of the Great Salt Lake (Aldrich and Paul 2002). Exceeding 20,000 in some years, this colony is one of the largest breeding populations in North America. American White Pelicans from this colony are common visitors to Utah Lake and large ponds within the regional study area. They are found almost exclusively in open water habitat and open emergent marshes, where they feed on fish.

Burrowing Owl (Athene cunicularia)

Burrowing Owls are rare breeders in the regional study area. During the breeding season, they prefer dry, open shortgrass habitats, generally without trees. They are typically associated with burrowing mammals such as ground squirrels. Across their range, Burrowing Owls nest in burrows in pastures, agricultural fields, and vacant lots in

residential areas, golf courses, cemeteries, university campuses, and fairgrounds. Burrowing Owls are generally opportunistic feeders and prey on arthropods, small mammals, birds, amphibians, and reptiles (Haug et al. 1993).

Short-eared Owl (Asio flammeus)

Short-eared Owls are breeders within the regional study area. They are associated with open country (e.g., grasslands and shrub-steppe habitat) (Holt and Leasure 1993). Short-eared Owls breed or forage in emergent marsh, cropland, pasture, salt desert scrub, and wet meadow habitats. Nest sites are typically on slight ridges in areas with enough vegetation to conceal the incubating female. During the nonbreeding season, these owls commonly forage and roost in large open woodlots, stubble fields, and shrub thickets. They feed primarily on small mammals (e.g., voles, deer mice, rats, shrews, rabbits, and pocket gophers) and a variety of birds (e.g., shorebirds, rails, gulls, terns, and passerines).

Bobolink (Dolichonyx oryzivorus)

Bobolinks are rare breeders in the regional study area. Bobolinks nest and forage in wet meadows, wet grasslands, and irrigated areas (primarily pasture and hay fields). Although historically common in northern Utah, Bobolinks are now rare in the state and their populations fluctuate unpredictably. During the breeding season, their diet includes weed and grain seeds, a variety of larval and adult insects, spiders, and harvestmen. The young are exclusively fed invertebrates. During migration, grain seeds are the staple diet, supplemented occasionally with insects (Martin and Gavin 1995).

Grasshopper Sparrow (Ammodramus savannarum)

Grasshopper Sparrows occur in the Great Basin region of Utah (McIvor 1998). They breed in shrub-steppe habitats in Utah and may nest or forage in wet meadow, cropland, and pasture habitats. Their preferred habitats in the western United States are lush portions of open grasslands that also include a sparse shrub component. Grasshopper Sparrows consume mostly large insects, such as grasshoppers, in summer. They capture insects exclusively on the ground; exposed, bare areas are required for successful foraging (Vickery 1996). Foraging habitat for Grasshopper Sparrow occurs within the project study area.

Columbia Spotted Frog (Rana luteiventris)

The Columbia spotted frog is found in mountainous habitats in or near cold, slow-moving streams, springs or marshes, ponds, and small lakes where emergent vegetation is not extensive. This species is likely to occur within the regional study area. It is active during the day and may cross terrestrial areas in spring and summer after breeding. It can be found in a range of habitats ranging from sagebrush benches to subalpine forests at elevations up to about 10,000 feet. Spotted frog adults are opportunistic feeders, consuming insects, mollusks, worms, and snails. The larvae are believed to feed on detritus, plant tissue, and organic debris.

Western (Boreal) Toad (Bufo boreas)

The western (boreal) toad historically occurred within the project study area (Shields and Moreitti 1982). It is not currently known to occur within the project or regional study area. It can be found in a variety of habitats, including slow-moving streams, wetlands, desert springs, ponds, lakes, meadows, and woodlands. Adults feed on numerous types of small invertebrates, such as ants, beetles, and grasshoppers, whereas larvae (tadpoles) filter algae from the water or feed on detritus. The western toad, which is inactive during cold winter months, may either dig its own burrow in loose soil or use the burrows of other small animals.

Fringed Myotis (Myotis thysanodes)

The foraging habitat of fringed myotis includes the regional study area (Zevellof and Collett 1988). Although this species is not currently known to occur within Utah and Salt Lake counties (it has been recorded from Tooele and Uintah counties on either side of Utah County) (Utah Division of Wildlife Resources 2003), it has the potential to occur within the regional study area. These bats inhabit a wide variety of environments, from desert scrub to

coniferous forests in the mountains. They typically roost in caves, mine tunnels, rock crevices, and old buildings (Davis and Schmidly 1994). They feed exclusively on insects, typically over water. Water courses and lowland riparian areas are very important to this species (Utah Division of Wildlife Resources 2003).

Spotted Bat (Euderma maculatum)

Very little is known about the distribution or biology of spotted bat populations in Utah. This species is considered one of North America's rarest mammals (Zeiner et al. 1990). The regional study area is within the known distribution of this species (Zevelloff and Collett 1988). The species occurs in a variety of habitats, but it has been collected most often in rough, desert-like terrain characterized by vertical cliffs suitable for roosting. Spotted bats often roost in caves and occasionally in buildings. Because no local distribution studies have been conducted, it is not known whether spotted bats utilize the project study area. This species has the potential to occur within the project study area.

Townsend's Big-Eared Bat (Corynorhinus townsendii)

Townsend's big-eared bats are common in the highlands of the western United States, often found in scrub plant communities, pinyon-juniper and pine forests, and deciduous woodlands (Zevelloff and Collett 1988). However, they appear to be generally uncommon in dry regions. Local distribution is closely tied to the presence of roosting caves, mines, or buildings within reasonable commute distances (up to 20 miles) of foraging areas (Pearson et al. 1952). Prey items include small moths, flies, lacewings, dung beetles, and sawflies (Davis and Schmidly 1994). Such features are likely present in many locations around Utah Lake, especially in the Wasatch Mountains and nearby desert hills. Foraging habitat for this species occurs within the project study area.

Kit Fox (Vulpes macrotis)

The regional study area is located near the extreme northeastern edge of the known distribution of kit fox (Zevelloff and Collett 1988). Kit foxes are found throughout western Utah in desert and semiarid regions with flat shrub or shrub-grass communities with little ground cover. Where these foxes occur in the Great Basin, shadscale (*Atriplex confertifolia*), greasewood (*Sarcobatus vermiculatus*), and sagebrush communities are common. Major prey items include desert rodents, jackrabbits, cottontail rabbits, ground-nesting birds, reptiles, and insects.

3.15.2.2 Methods Used to Describe the Affected Environment

The following methods were used to acquire information on the biological resources, including threatened and endangered species that occur in the project and regional study areas.

Habitat Mapping and Evaluation

Wildlife habitats within the project study area, including open water, riparian, emergent marsh, pasture, cropland, scrub, and developed (urban landscaping) areas within the project and regional study areas, were identified based on interpretation of recent aerial photographs of the area and GIS maps of land cover types, based on USGS National Land Cover and National Wetland Inventory (NWI) datasets. Figures 3.15-3 to 3.15-6 show the land cover types. A site visit of the project study area was conducted August 9 to 11, 2004, to assess general habitat distribution and conditions. The project study area was also evaluated for the occurrence of potential special-status wildlife habitat.

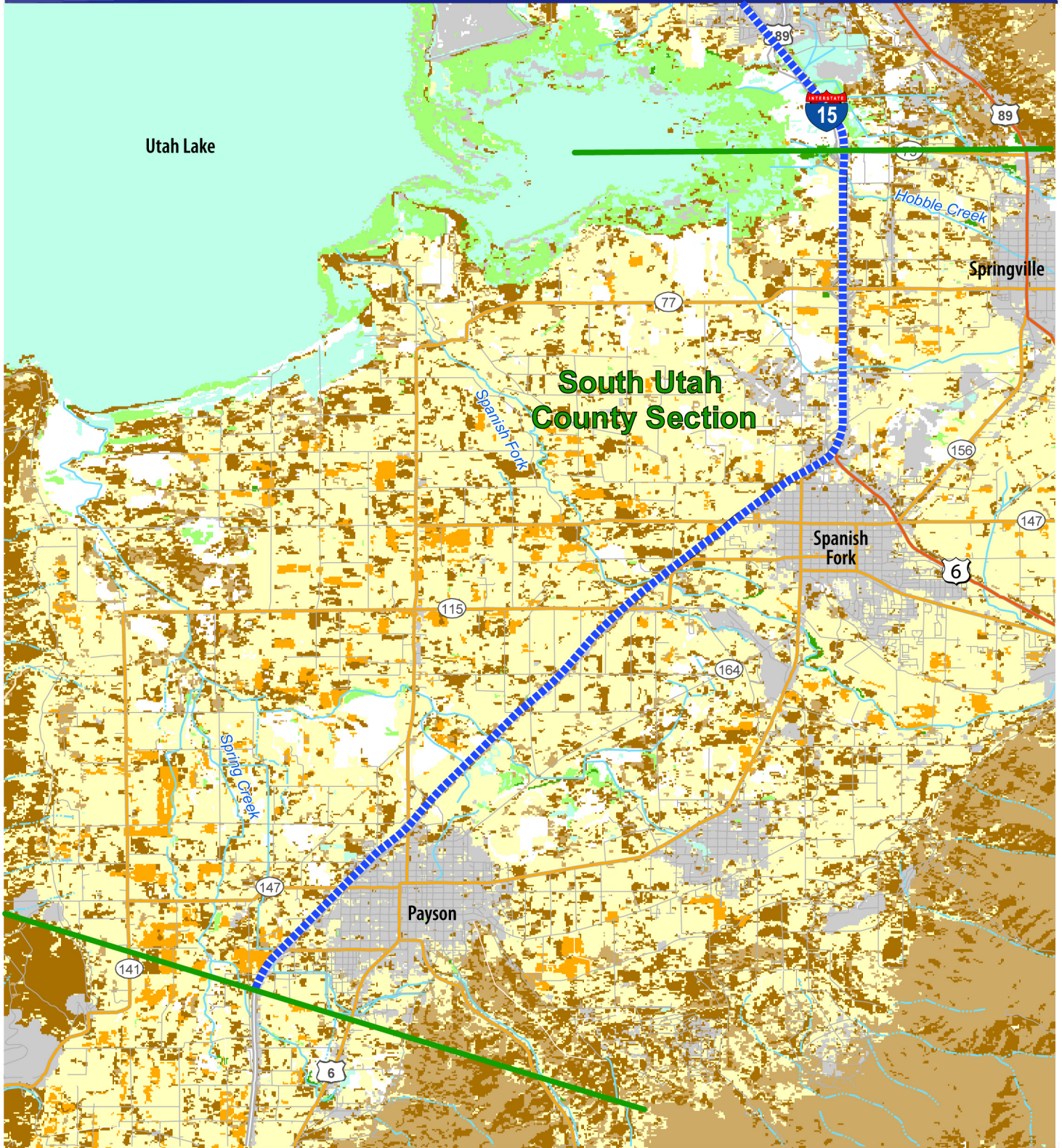


Figure 3-15.3

Land Cover in the Wildlife and Special Status Species Project Study Area - South Utah County Section

LEGEND:

■ I-15 Corridor	■ Cropland	■ OpenWater	■ Scrub
■ Developed	■ Pasture	■ Unclassified	
■ EmergentMarsh	■ Riparian	■ Upland	

0 1 2 Miles



Data Sources: USGS National Land Cover Dataset and USFWS National Wetlands Inventory

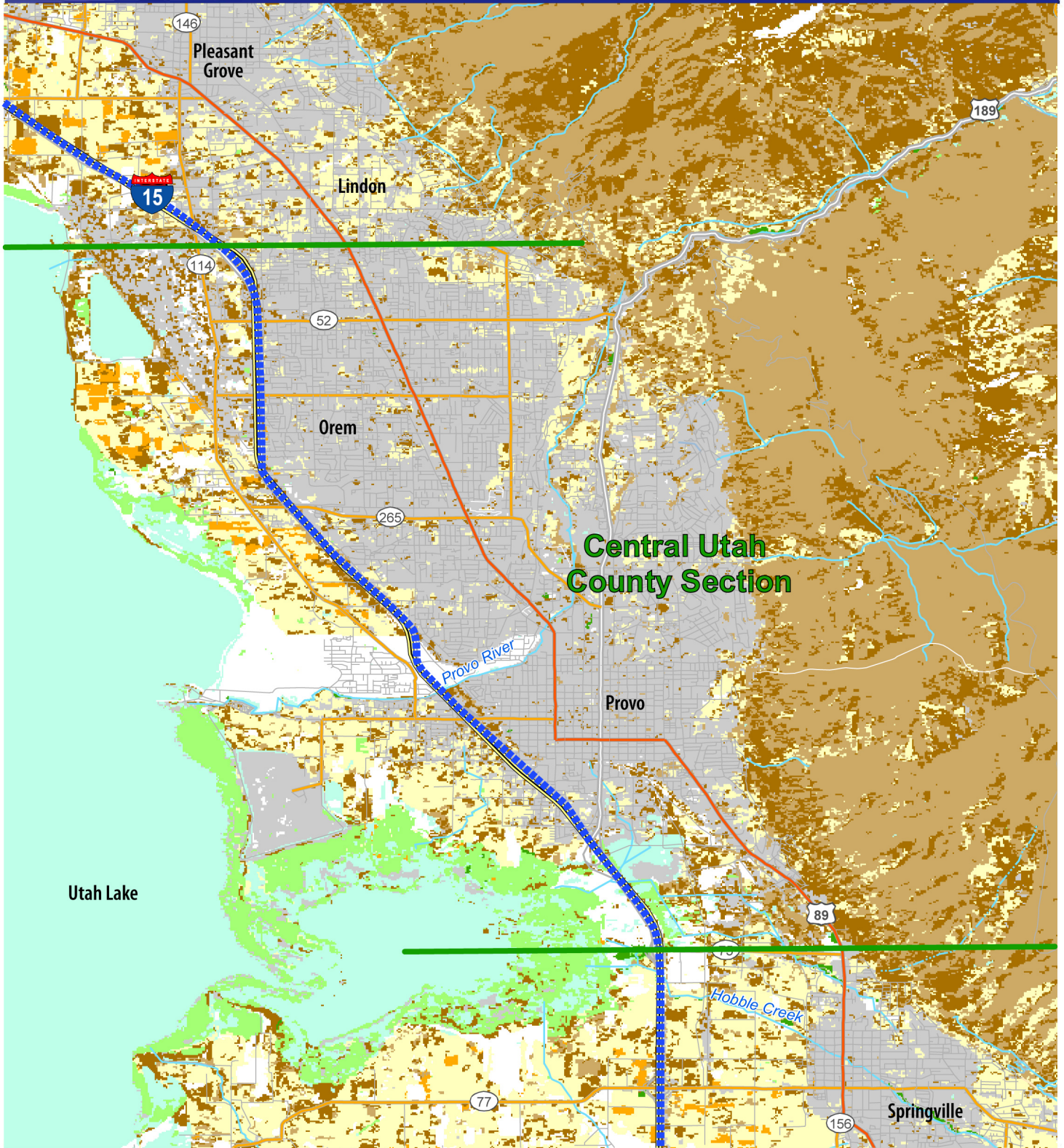


Figure 3-15.4

Land Cover in the Wildlife and Special Status Species Project Study Area - Central Utah County Section

LEGEND:

■ I-15 Corridor	■ Cropland	■ OpenWater	■ Scrub
■ Developed	■ Pasture	■ Unclassified	
■ EmergentMarsh	■ Riparian	■ Upland	

0 1 2 Miles

Data Sources: USGS National Land Cover Dataset and USFWS National Wetlands Inventory





Figure 3-15.5

Land Cover in the Wildlife and Special Status Species Project Study Area - North Utah County Section

LEGEND:

- | | | | |
|------------------|------------|----------------|---------|
| ■ I-15 Corridor | ■ Cropland | ■ Open Water | ■ Scrub |
| ■ Developed | ■ Pasture | ■ Unclassified | |
| ■ Emergent Marsh | ■ Riparian | ■ Upland | |

0 1 2 Miles



Data Sources: USGS National Land Cover Dataset and USFWS National Wetlands Inventory

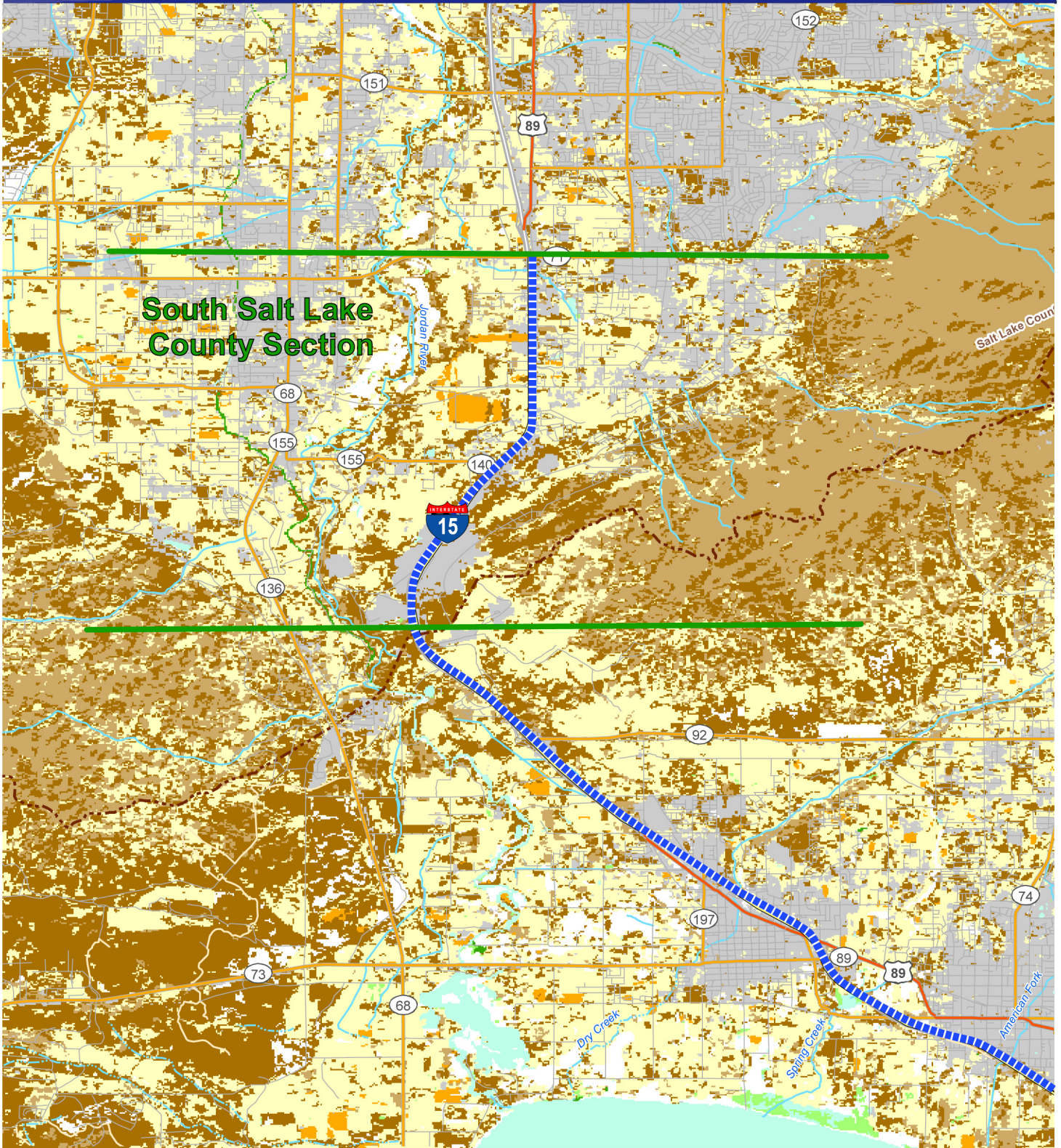


Figure 3-15.6

Land Cover in the Wildlife and Special Status Species Project Study Area - South Salt Lake County Section

LEGEND:

■■■■ I-15 Corridor	■ Cropland	■ Open Water	■ Scrub
■ Developed	■ Pasture	■ Unclassified	
■ Emergent Marsh	■ Riparian	■ Upland	

0 1 2 Miles

Data Sources: USGS National Land Cover Dataset and USFWS National Wetlands Inventory



Species Occurrence Status

Plant and wildlife species that occur or could potentially occur within the project and regional study areas were identified through a review of available species occurrence records and reports, and their general ecological status within these areas was assessed and described. Meetings were held with USFWS and UDWR on September 8, 2004, August 2, 2005, February 21, 2006, and May 17, 2007 to obtain additional information on special-status species that could occur in the study area. Additionally, coordination meetings between UDOT and USFWS were held on June 22, 2007 and July 27, 2007 regarding potential impacts to the June sucker.

Focused Special-Status Species Surveys

Focused surveys for Ute ladies'-tresses were conducted along the I-15 Corridor August 22 to 25 and September 6 to 9, 2005 and from August 13 to 31, 2007 (two seasons). During these surveys, searches for the species were conducted in potential habitat within 300 feet of the proposed project's limits of disturbance. The results of the surveys are documented in Section 3.15.3.2

3.15.2.3 Existing Wildlife Habitat Conditions

This section describes the existing biological conditions within the regional and project study areas, including sensitive species and their habitats. A description of historic conditions is included to provide context for the discussion of cumulative impacts later in this section.

Physical Setting

The project and regional study areas are located on the east side of Utah Lake, in Utah Valley, at the western base of the Wasatch Mountains. The Wasatch Mountains mark the eastern limit of the Great Basin Physiographic Province, which is characterized by a cold high-desert climate. The regional study area includes the Utah Lake and Jordan River Hydrological Units below 4,700 feet in elevation.

Utah Lake is a large, shallow freshwater lake covering more than 94,000 acres (Jackson and Stevens 1981; Fuhrman et al. 1981). The lake depth is 6 to 10 feet and is affected by seasonal fluctuations in the amount of water flowing into the lake. The streams that discharge into the lake primarily originate in the Wasatch and Uinta Mountains to the east. The lake is supported by four major streams (the American Fork River, Hobbie Creek, the Provo River, and the Spanish Fork River), several minor perennial streams, and many intermittent streams. All four of the main streams supplying the lake cross the project study area. The area surrounding the lake is underlain by low-pressure artesian aquifers (see Section 3.12, *Water Resources*), and numerous springs are present in and near the lake (Fuhrman et al. 1981). Utah Lake's only outlet is the Jordan River.

Biological Setting

The existing habitats within the project study area exhibit extensive fragmentation today because of previous construction of railroad corridors, I-15, and other transportation facilities and because of other previous development and disturbance (e.g., urban/suburban development, farming, grazing, dikes, and fencing) within the project vicinity. These and other land use changes have resulted in marked wildlife habitat fragmentation along the Wasatch Front. In particular, they have resulted in the development of wildlife movement barriers between the Wasatch Mountains and Utah Lake and the Jordan River. Road networks in the intervening uplands, conversion of land to agricultural use, and urban development have fragmented significantly historic wildlife habitats in the area. The wildlife populations in the project vicinity are likely to have already experienced many of the population changes typically associated with habitat fragmentation (e.g., reduced carrying capacity, lower reproductive success, and higher susceptibility to predation). Existing conditions represent highly modified populations from historic conditions. Based on observed changes in other fragmented wildlife populations described in the literature (e.g., Soulé 1987; Forman 1995; Primack 2000), it is presumed that wildlife in the project vicinity has experienced reduced species diversity, population density, and distribution in response to the cumulative long-term effects of these land use changes.

The existing I-15 facility does experience some incidental road kill, primarily of small mammals. However, vehicle collisions with larger mammals occasionally occur.

Utah Lake and the Jordan River provide important habitat for a great variety of amphibians, reptiles, birds, and mammals, some of which are considered rare or have small geographical distributions. More than 347 wildlife species, including 17 fish, six amphibians, ten reptiles, 244 birds, and 70 mammals, have been documented as occurring within the project and regional study areas or have the potential to occur based on the presence of suitable habitat and the general abundance of the species in the region (Utah Division of Wildlife Resources 2007a and 2007b; Jones & Stokes 2005). Of these species, 252 (239 birds and 13 bats) are migratory. Up to 174 of these species (87 birds, 13 fish, seven amphibians, ten reptiles, and 57 mammals) could potentially breed within the project study area.

Table 3.15-1 lists the special-status species in the regional and project study areas. Of the 31 special-status species listed in Table 3.15-1, only 20 species occur or could occur in the project and regional study area including one plant, two fish, 11 birds, three bats, two amphibians, and one fox. These are classified as special-status species or species that are protected by one or more state or federal environmental laws.

The proposed project alignment crosses a complex of wetland and upland habitats that include the following:

- **Wetland/Riparian Habitats:** Open water, riparian, and emergent marsh.
- **Upland Habitats:** Pasture, cropland, scrub, upland, and developed (including urban landscaping).

The general distribution of these habitats in the project and regional study areas is illustrated in Figure 3.15-2. These habitats and the wildlife associated with each are described below.

Open Water: Open water habitat consists of inundated areas with no emergent vegetation. Within the project study area, the majority of open water includes the eastern edge of Provo Bay on Utah Lake and the Provo and Jordan Rivers.

Utah Lake: Utah Lake is a natural lake, but was developed as a storage reservoir in 1872 with the creation of a low dam at the Jordan River outflow. Utah Lake is a freshwater lake; however, because of the high evaporation rate of the lake, the lake tends to be slightly saline, eutrophic (i.e., contains a high level of nutrients), and turbid. It serves as a primary irrigation water supply for thousands of acres of farmland in Salt Lake County. Water levels are constantly adjusted to accommodate agricultural and local water district needs, sometimes resulting in substantial degradation of fish habitat, particularly for the June sucker (*Chasmistes liorus*), an endangered endemic species.

Nine fish species, 79 bird species, and two mammal species represent the vertebrate species potentially associated with open water habitats within the project study area (Table 3.15-1 and detailed in Section 3.15.2.1). Four special-status species (June sucker, leatherside chub, American White Pelican, and Bald Eagle) use or could potentially use open water habitat in the project study area. Other common birds associated with open water habitat include Pied-billed Grebe (*Podilymbus podiceps*), Double-crested Cormorant (*Phalacrocorax auritus*), White-faced Ibis (*Plegadis chihi*), Great Blue Heron (*Ardea herodias*), Osprey (*Pandion haliaetus*), and Belted Kingfisher (*Ceryle alcyon*). These species depend largely on many of the food resources found in or around this habitat. Wintering waterfowl, such as Common Goldeneye (*Bucephala clangula*), and Bufflehead (*Bucephala albeola*), also use open water habitats extensively. Bald Eagle and Peregrine Falcon prey on the shorebirds and waterfowl that concentrate in these areas.

Riparian Habitat: Although limited in extent, riparian habitat in the project study area provides food and shelter for two amphibian, three reptiles, 119 birds, and 38 mammal species. Four special-status species (Bald Eagle, Northern Goshawk, Yellow-billed Cuckoo, and Townsend's big-eared bat) use or could potentially use riparian habitat in the project study area. Other species associated with this habitat include Swainson's Hawk (*Buteo swainsoni*), Solitary Sandpiper (*Tringa solitaria*), Willow Flycatcher (*Empidonax traillii*), Loggerhead Shrike (*Lanius ludovicianus*), Virginia's Warbler (*Vermivora virginiae*), and Brewer's Sparrow (*Spizella breweri*).

The riparian habitats throughout the regional study area provide foraging habitat for many species of migrating/summer visitant insectivores such as warblers, kinglets, sparrows, flycatchers, swallows, and several

species of bats. Although they are limited in size and abundance and are widely dispersed in the project study area, these habitat patches provide links within a long network of similar patches along the Wasatch Front, a principal migratory corridor for these species. Russian olive (*Elaeagnus angustifolius*) trees that occur in riparian habitats also provide forage and shelter for a variety of fruit-eating species, such as Bohemian and Cedar Waxwings (*Bombycilla garrulous* and *Bombycilla cedrorum*), Hermit Thrush (*Catharus guttatus*), and American Robin (*Turdus migratorius*), as well ground-foraging Ring-necked Pheasant (*Phasianus colchicus*) and California Quail (*Callipepla californica*). A total of 14 rodent species, 12 bat species, porcupine, red fox, raccoon, long-tailed weasel, striped and spotted skunks, and mule deer also use these riparian areas. All of the reptiles found in this habitat are snakes, which feed on the abundant rodents, fish, birds, amphibians, and various invertebrates in the area.

River / Stream Riparian Habitat: River/stream riparian habitat consists of stream channel and vegetated banks with woody overstory vegetation. Within the project study area, the majority of this habitat includes the Provo, Spanish Fork, American Fork River, Spring Creek, Jordan River, and Hobbie Creek.

Provo River: The Provo River is one of the major tributaries to Utah Lake and is used for agriculture, drinking water, and recreation. Several reservoirs and diversions, including the Jordanelle Reservoir, Deer Creek Reservoir, and Olmsted and Murdock Diversions, alter stream flow within the Provo River. Water flows downstream toward the Jordanelle and Deer Creek Reservoirs, then through Orem and Provo, and ultimately into Utah Lake.

The Provo River historically provided abundant fish habitat. This habitat was impacted by the damming of many natural lake basins in the early 1900s for water storage, channelization and straightening of the Provo River, inundation of 5 stream miles because of the filling of Jordanelle Reservoir; diking in the 1950s, and widespread dewatering due to irrigation diversions.

The habitat in the lower portion of the Provo River, from Utah Lake to just upstream of the I-15 stream crossing, was assessed qualitatively on August 10, 2004. Riparian vegetation was present along the entire river segment. In many places, large woody debris and other sources of fish cover habitat were present in the river. There was minimal sinuosity in the channel. Several standpipes observed along the bank were introducing water into the Provo River from adjacent agricultural fields.

Spanish Fork River: In 1860, settlers began diverting the Spanish Fork River for irrigation. The Strawberry Reservoir, which was completed in 1908, regulated water flow in the river. The Spanish Fork River historically contained spawning habitat for June suckers. Observations of the river made on August 10, 2004, revealed a heavily channeled stream with abundant filamentous algae and some overhead canopy.

Hobbie Creek: Hobbie Creek flows into Utah Lake near the heavily vegetated “Camelot Forest.” Hobbie Creek is a perennial stream because of discharge from several springs in the upper watershed and irrigation water return to the creek. The confluence of Hobbie Creek and Utah Lake includes extensive marsh habitat. When the reach of Hobbie Creek within the project study area was observed on August 11, 2004, the creek channel substrate was sandy, with minimal established habitat structure (e.g., rocks, vegetation), and the only fish species observed were mosquitofish (*Gambusia* sp.) and common carp.

American Fork River: Flow was extremely low at the time of the field assessment, and the streambed consisted mostly of gravel, with filamentous algae covering the channel bottom. No live fishes were observed within the river, but many dead common carp were observed at the confluence of the river and Utah Lake. The riverbanks in this area were largely covered by riprap. Farther upstream, the river water was impounded on private property. At this location, there was substantial riparian vegetation overhanging the creek, providing cover for fish.

Spring Creek: Spring Creek is the outlet of Mill Pond in American Fork and eventually flows into Utah Lake.

Jordan River: The Jordan River meanders for approximately 58 river miles from the outlet of Utah Lake north to the Great Salt Lake. Land uses adjacent to the river include agriculture, industrial, and residential uses. The Jordan River was historically a natural, meandering river corridor that provided abundant fish habitat, but it has been altered by development, including industrial and municipal waste discharges; encroachment of industrial, commercial, and residential activities on its floodplain; dredging and channeling; extensive water diversions and manipulations; and

urban runoff. The Jordan River has been listed as an impaired water that does not meet Class 3B (warm-water species of game fish) or Class 3C (non-game fish) standards under the Clean Water Act because of low dissolved oxygen and high ammonia, chlorine, pathogens, pH, turbidity, and total toxicity.

The earliest dam along the Jordan River was constructed in 1859. Today, there are two major dams—Turner Dam at the Jordan Narrows and Joint Dam about 1 mile downstream from Turner Dam—that divert water into the Jordan, Salt Lake, and South Jordan Canals. The Turner Dam diverts water to the East Jordan Canal and Utah and Salt Lake Canal.

Two habitat enhancement projects are located along the Jordan River within the regional study area. The Migratory Bird Habitat Restoration Project between 9800 South and 12100 South along the east side of the river is managed by the Utah Reclamation Mitigation and Conservation Commission (URMCC), in conjunction with Great Salt Lake Audubon Society and Tree-Utah. URMCC also manages the 81-acre I-15 Wetland Mitigation Site and Wildlife Preservation Area south of 12300 South, also on the east side of the river.

A site visit of the Jordan River was conducted on August 9, 2004. The portion of river assessed qualitatively appeared channeled, with sandy, silty substrate and abundant filamentous algae. The banks were covered with riparian vegetation that included olive trees, cottonwood, and saltcedar (*Tamarix ramosissima*) on the west side of the channel and emergent aquatic vegetation along the east bank. The river bank was supported by riprap in various locations. Mosquitofish were observed during the site visit.

Emergent Marsh: Emergent marsh provides suitable habitat for fish, amphibians, reptiles, birds, and mammals. American Bittern (*Botaurus lentiginosus*) and masked shrew (*Sorex cinereus*) are the only species considered to be exclusively associated with this habitat. Other common species that use this habitat include Canada Goose (*Branta canadensis*), Mallard (*Anas platyrhynchos*), Gadwall (*Anas strepera*), American Coot (*Fulica americana*), Song Sparrow (*Melospiza melodia*), and Red-winged Blackbird (*Agelaius phoeniceus*). Three special-status bird species (American White Pelican, Bald Eagle, and Short-eared Owl) and three special-status bat species (Townsend's big-eared bat [*Plecotus townsendii*], spotted bat [*Euderma maculatum*] and fringed myotis [*Myotis thysanodes*]) use or could potentially use emergent marsh in the project study area as foraging habitat. Fish in these marshes, particularly common carp, provide food for numerous fish-eating bird species, including Great Blue Heron, Snowy and Great Egret (*Egretta thula* and *Ardea alba*), American White Pelican, Double-crested Cormorant, California Gull (*Larus californicus*), and Forster's Tern (*Sterna forsteri*).

An abundance of aquatic and terrestrial insects produced in emergent marshes provides food for a broad diversity of insectivorous birds, including swallows, swifts, flycatchers, warblers, sparrows, and blackbirds, as well as several species of bats. The shallow waters of the marshes provide suitable habitat for amphibian species that are represented in the project study area. Amphibians and reptiles common to emergent marshes of the project study area are also comparably common in other well-watered habitats such as irrigated pastures. Common mammals in this habitat include voles, muskrat, and raccoon.

Pasture: Agricultural pasture is potentially used by a diverse assemblage of wildlife. Eight special-status species (Bald Eagle, Ferruginous Hawk, Burrowing Owl, Short-eared Owl, Bobolink, spotted bat, fringed myotis, and Townsend's big-eared bat) use or could potentially use this foraging habitat within the project study area. Pastures are dry at times, but flood irrigation of the fields provides rich foraging habitat for species such as White-faced Ibis, Franklin's Gull (*Larus pipixcan*), and California Gull. Bald Eagles prey and scavenge on some of the larger bird species that use this habitat (Buehler 2000). Common rodents (e.g., voles and ground squirrels) and lagomorphs (rabbits and hares) provide prey for many raptors, including Red-tailed Hawk (*Buteo jamaicensis*), Swainson's Hawk, Rough-legged Hawk (*Buteo lagopus*), Golden Eagle, and Short-eared Owl.

Cropland: Large tracts of cropland are located within the project study area (Figure 3.15-2). Because of the active rotation of crops, much of the cropland habitat is disturbed regularly, providing limited habitat availability for wildlife species that occur there. Most species use these lands when the fields are fallow, but some find food and shelter in or along the periphery of planted cropland. Four special-status species (Ferruginous Hawk, Burrowing Owl, Short-eared Owl, and Bobolink) use or could potentially use this foraging habitat within the project study area. Ground-

nesting birds (Ring-necked Pheasant, California Quail, Killdeer [*Charadrius vociferous*], Canada Goose, Northern Harrier, Short-eared Owl, and Western Meadowlark) commonly forage in planted fields but nest in non-crop vegetation or fallow crop fields around their periphery. Meadow voles, gophers, ground squirrels, and rabbits occurring in these peripheral habitats are prey for a variety of raptors, foxes, coyotes, and gopher snakes. Waterfowl, including Canada Goose, Snow Goose, Mallard, Northern Pintail, and American Wigeon, regularly forage in fallow cropland.

Scrub: Where limited disturbance has occurred, scrub habitat provides suitable nesting and foraging resources for wildlife. Scrub is the only habitat within the project study area that is likely to support populations of sagebrush and side-blotched lizards. A total of seven special-status species (Bald Eagle, Ferruginous Hawk, Burrowing Owl, Short-eared Owl, spotted bat, fringed myotis, and Townsend's big-eared bat) use or could potentially use this foraging habitat within the project study area. Many migratory birds find shelter and food resources (insects, fruit, and seeds) in this habitat, including various warblers, swallows, and sparrows. Bald Eagles regularly prey and scavenge on some of the larger birds and small mammals that use this habitat (Buehler 2000). Characteristic mammals of the area include numerous desert-adapted rodents and carnivores (e.g., foxes, coyotes, bobcats, weasels, and badgers).

Developed Areas and Urban Landscaping: The vegetation at existing interchange, residential, commercial, and industrial areas of the project study area has been converted to urban landscaping. Some of this landscaping also exists in rural residential areas, including around houses and outbuildings. Artificial landscaping incorporates many nonnative and native trees, shrubs, and other vegetation. The urban landscaping in the project study area provides useable habitat for a variety of native and introduced migratory species. Much of the urban landscaping (i.e., lawns, shrubs, and trees) provides food and shelter resources for a variety of wildlife. Although the more-common wildlife species in developed areas are generally nonnative species (e.g., Rock Pigeon, House Sparrow, European Starling, house mouse, and black rat) or highly urbanized native species (e.g., Mourning Dove), many other native species find resources in the patchwork of vegetated urban areas. One special-status species, Yellow-billed Cuckoo, uses or could potentially use this habitat within the project study area. Most of the bird species are incidental migrant songbirds that may utilize the trees and shrubs in urban landscaping for foraging, roosting, and loafing. Barn Swallows and Cliff Swallows typically nest in large colonies in abandoned buildings and on bridges, often in developed areas. Mammals typical of developed areas include mice and rats that use buildings and landscape plants; opportunistic raccoons and muskrats that find generally marginal habitat in parks, preserves, and scattered woodlots; and wide-ranging predators such as red foxes, coyotes, and bobcats that negotiate the urban environment in search of prey using patches of remnant habitat. Because much of the native vegetation that formerly occurred in developed areas is gone, the replacement urban shrubs and trees in housing areas and parks can provide food and roosting habitat for many species of migratory and resident wildlife.

3.15.3 Impacts on Wildlife and Wildlife Habitats

The existing habitat conditions of the project and regional study areas are used as baseline conditions for analysis of direct, indirect and cumulative impacts. Potential impacts on wildlife habitat resulting from implementation of the project could include habitat loss and habitat degradation. Any changes in habitat conditions that would potentially affect the status of the special-status species covered in this section were evaluated as potential impacts.

The impact of habitat loss was assessed by evaluating the relative amount of wildlife habitat that would be lost because of construction and operation of the project, what species could potentially utilize that habitat, and whether the amount of habitat loss would substantially affect long-term regional species viability.

A qualitative map-based analysis was conducted to determine how wildlife habitat would change within the project and regional study areas with implementation of the alternatives, and how these changes could potentially affect species that use the habitats. Direct habitat loss that could occur as a result of highway construction was determined by overlaying the Alternative 4 limits of disturbance onto the wildlife habitat map and evaluating the approximate area of each habitat within those boundaries.

For the cumulative-effects analysis discussed in Section 3.19 of this chapter, an estimate of historic and present habitat availability was required. An estimated regional historic wetland/wildlife habitat map was developed based on soil characteristics of these habitats as identified in the Natural Resources Conservation Service (NRCS) Soil Survey Geographic (SSURGO) database. Specific criteria used for identifying soil polygons that are representative of these habitat types included soil type descriptors such as those supporting “the habitat element shallow water,” “habitat requirements for wetland wildlife,” or “the wildlife habitat element for wetland plants.” A soil class needed to be “good” for any of the categories to be included in the final dataset used to develop the estimated habitat availability. These data indicate that approximately 17% of the historic habitat remains in the Utah Lake Hydrologic Unit, and 33% remains in the Jordan River Hydrologic Unit.

3.15.3.1 Alternative 1: No Build

Under the No Build Alternative, conditions would stay as they are for both special-status and common wildlife and plant species.

3.15.3.2 Alternative 4: I-15 Widening and Reconstruction

Based on the available information on species occurrences, status, and available habitat, as well as the project description and footprint, the following potential impacts that could occur with implementation of this alternative were analyzed. Direct mortality of sedentary or less mobile wildlife species may result from project construction activities such as excavation, grading, and general equipment traffic. Incidental migrants, including sensitive species, may occur in the area; however, the high level of existing disturbance along the I-15 Corridor and the added disturbance of construction would be likely to result in heightened avoidance of the area by these species. Therefore, it is unlikely that direct mortality of any special-status species would occur.

Alternative 4 would result in direct loss of wildlife habitat in the project right-of-way. Habitat losses would be caused by such activities as excavation, grading, highway construction, and development and use of staging and access areas. The extent and character of these losses would be a function of the location of the alignment within the matrix of habitats in the project study area. The largest amount of habitat loss in the project study area would be urban landscaped areas, followed in order by pasture, scrub, and cropland habitat. Urban landscaped areas provide the least valuable wildlife habitat in the study area. Additionally, Alternative 4 would directly affect small areas of open water, emergent marsh, and riparian habitat.

Because the proposed project is primarily within or immediately adjacent to the existing I-15 right-of-way, very little wildlife habitat fragmentation is likely to occur. The habitat fragmentation analysis involved visual examination of the wildlife habitat map with the footprint of the project overlain on the map and general assessment of the extent to which existing habitat polygons would be fragmented, reduced, or lost. The areas of increased fragmentation will occur primarily at the North Lehi Interchange and the American Fork Interchange, where roadway facilities will extend outward from the existing I-15 Corridor. The fragmentation effects of this alternative on local wildlife populations would be additive to existing levels of fragmentation and all reasonably foreseeable future fragmentation that is likely to occur in the area. Because the existing habitat in the project study area is already highly fragmented by a diversity of human activities (e.g., agriculture, fences, roads, urban development), the additional fragmentation effects that this alternative would have on wildlife would likely be minimal, but would be additive to the effects of direct habitat loss.

Construction of I-15 may increase distribution and spread of noxious weeds and other invasive plants into adjacent native vegetation communities thereby reducing overall wildlife habitat quality. However, implementation of mitigation measures identified in Section 3.13.5 would ensure that construction activities would not introduce or spread invasive species in the study area.

Water Quality

Implementation of Alternative 4 may result in increases in highway runoff contaminants. Section 3.12, *Water Resources*, lists the primary contaminants in the project study area and their sources. The primary contaminants are not the only contaminants present in highway runoff, but they are the contaminants of primary concern regarding effects on water quality. These contaminants reduce water quality and potentially affect wildlife in a variety of ways, including habitat degradation.

The drainage concept for Alternative 4 includes the containment and treatment of storm water. Storm water would be collected, enter detention basins, be treated using an approved BMP and be released into the watershed. Consistent with Utah Department of Water Quality requirements, detention basins would be designed for a minimum 30-minute holding time to allow for sediment to settle out. Detention basins would only contain water after a precipitation event and would be designed to drain.

Temporary indirect effects, such as habitat modification due to sedimentation, also have potential to occur during construction. If it is necessary to encroach on stream channels (including side channels), the placement of temporary cofferdams could temporarily increase sedimentation.

Urban Landscaping

The removal of existing vegetation on the I-15 right-of-way, plus the primarily commercial and residential landscaping from the additional right-of-way, would reduce the availability of roadside habitat for resident birds and small mammals. The landscape concept for the reconstructed I-15 would include low maintenance, low wildlife forage value plant materials.

Threatened, Endangered, and Other Special-Status Species

The principal potential effects on threatened, endangered, and special-status species could include direct loss of habitat. The effects on these species would be primarily related to the amount of direct, permanent habitat loss. Because of the existing high level of disturbance within the project study area and the corresponding reduced carrying capacity, the overall impact of these losses alone would not affect the long-term viability of any of these species in the region.

Table 3.15-2 summarizes the impact of Alternative 4 on these species. The following discussion provides information on how this alternative could affect habitats for species of concern, based on input received from USFWS and UDWR. The determinations were based on an evaluation of the known species habitat requirements and DWR / USFWS reported existing and historical population distributions, as referenced throughout this section. The intersection of suitable habitat and current/historical population distributions was utilized to determine the presence/absence of a particular species or its habitat within the project study area and the context/intensity of potential impacts. A Biological Assessment was completed for the June Sucker, and two-years' field surveys were completed for Ute Ladies'-tresses.

Federally Listed and Candidate Species

Two species listed as threatened or endangered under the ESA are known to occur or have the potential to occur within the project study area: Ute ladies'-tresses and June sucker. In addition, Yellow-billed Cuckoo, a candidate species under the ESA and the recently delisted Bald Eagle have the potential to occur within the project study area.

Ute Ladies'-tresses (Threatened): Ute ladies'-tresses have been reported from 14 locations in Utah County, including locations near the project vicinity in Lehi, American Fork, Springville, Spanish Fork, and Payson (Fertig et al. 2005; HDR 2007). These populations were reported to occur in wet meadows, usually in floodplains, between 4,490 and 5,460 feet in elevation. Wet meadows along the I-15 Corridor are potentially suitable habitat for this species. Under Alternative 4, up to 29.12 acres of wet meadow would be filled. Under the Preferred Alternative,

20.09 acres would be filled. Two project-level pedestrian presence/absence surveys of wet meadow habitat along the I-15 Corridor detected no Ute ladies'-tresses within the project study area. Therefore, Ute Ladies'-tresses are presumed to be absent from the study area, and this alternative would have no direct effects on individuals of the species. Loss of this habitat would be likely to result in minimal effect, but it would contribute to the continuing regional cumulative loss of habitat for this species.

June Sucker (Endangered): This alternative would involve construction that crosses the Provo River within USFWS-designated June sucker critical habitat. The June Sucker Recovery Plan (JSRP) (U.S. Fish and Wildlife Service 1999a) describes conservation measures and a strategy for recovery for this species that includes actions to recover and enhance the migration and spawning habitat of the species in the Provo River and to minimize impacts associated with competition and habitat modification from non-native species. This alternative would implement all necessary stream management best management practices (BMPs) that are consistent with the goals and objectives of the JSRP and would avoid impacts to the June sucker. Alternative 4 would not modify the Provo River channel; therefore, no direct impacts are anticipated to occur to individuals of this species or to their habitat during construction or subsequent operation of the project. Modification to the Provo River channel bank will be required above the ordinary high water mark, including removal of riparian vegetation; however, no direct impacts to June sucker habitat are anticipated. Temporary indirect effects, such as habitat modification due to sedimentation, have potential to occur during construction.

Coordination meetings between UDOT and USFWS were held on June 22, 2007 and July 27, 2007 regarding potential impacts to the June sucker. A BA has been prepared. The concurrence letter from the U.S. Fish and Wildlife Service is included in Appendix A.

Yellow-billed Cuckoos (Candidate): Yellow-billed Cuckoos are rare migrants in the regional study area; they have low potential to occur in the project study area because of limited suitable riparian breeding habitat. The species is known to occur in the regional study area. Accordingly, all remnant riparian habitats, including those available in the project study area, could potentially provide suitable habitat for Yellow-billed Cuckoos. No direct impacts are anticipated to occur to individuals of this species as a result of project implementation. Alternative 4 would result in direct loss of some limited suitable riparian habitat for this species near the highway corridor. However, the existing disturbance from I-15 is likely to deter individual birds in the area from using much of this habitat. Loss of this habitat would likely result in minimal effect on foraging and breeding in the area, but it would contribute to the continuing regional cumulative loss of habitat for this species. As with other transient birds that use the regional and project study areas, it is unlikely that this loss of limited suitable habitat would affect the long-term viability of Yellow-billed Cuckoos in the region.

Bald Eagle (Delisted July 9, 2007): Bald Eagles are common winter visitors to the regional and project study areas and are regularly seen perching around Utah Lake or occasionally flying along the Jordan River. One active nest exists near the Jordan River north of Salt Lake City. This nest is not close to the project study area (more than 20 miles away), and any eagles nesting there would not be disturbed by this alternative. In areas where the highway is relatively close to the Provo River delta or the Jordan River north of Utah Lake, construction noise would not be significantly higher than existing highway and urban noise and therefore would not be likely to affect any incidental use of these areas by eagles. No direct effects on individuals of this species are anticipated to occur as a result of project implementation. Alternative 4 would result in direct loss of some potential foraging habitat (emergent marsh, pasture, and open water) for this species near the highway corridor. However, the existing disturbance from I-15 has deterred individual birds in the area from using much of this habitat. Loss of this habitat would be likely to result in minimal effects on foraging in the area, but it would contribute to the continuing regional cumulative loss of foraging habitat for this species. As with other transient birds that use the regional and project study areas, it is unlikely that this loss of foraging habitat would affect the long-term viability of Bald Eagles in the region.

State of Utah Conservation Agreement Species (CAS)

Two of the four CASs listed in Table 3-15.1 are known to occur or have potential to occur within the project study area: Northern Goshawk and Columbia spotted frog.

Northern Goshawk: Northern Goshawks have not been observed in the project study area. However, some studies on seasonal movement and habitat use patterns suggest that the species could potentially forage in the regional area because it supports prey species (small birds and mammals). The few wintering individuals that may occur in this region range over a large area, foraging in a variety of grassland and shrub habitats. No direct impacts are anticipated to occur to individuals of this species as a result of project implementation. Alternative 4 would result in direct loss of some limited suitable grassland and shrub habitats for this species near the highway corridor. However, the existing disturbance from I-15 is likely to deter individual birds in the area from using much of this habitat. Loss of this habitat would likely result in minimal effect on foraging in the area, but it would contribute to the continuing regional cumulative loss of foraging habitat for this species. As with other transient birds that use the regional and project study areas, it is unlikely that this loss of limited suitable foraging habitat would affect the long-term viability of Northern Goshawks in the region.

Columbia Spotted Frog: Columbia spotted frog is believed to have occurred historically in the Spanish Fork River, Utah Lake, Provo River, and Jordan River. Surveys conducted in the early 1990s (Ross et al. 1993) showed that distribution of spotted frog along the Wasatch Front had declined notably. During the site visits, no spotted frogs were observed in the Jordan River, but extant populations were located near the Spanish Fork River (Holladay Springs), Utah Lake (near Mona), and Provo River (Heber Valley) (Perkins and Lentsch 1998). Although these drainages cross the project study area, none of the occurrence records for this species occur within the project study area. No direct impacts are anticipated to occur to individuals of this species as a result of project implementation. Alternative 4 would result in direct loss of some limited suitable open water habitat (emergent marsh and open water) for this species near the highway corridor. Loss of this habitat would likely result in minimal effect, but it would contribute to the continuing regional cumulative loss of habitat for this species. It is unlikely that this loss of limited suitable habitat would affect the long-term viability of Columbia spotted frogs in the region.

State of Utah Wildlife Species of Concern

Ferruginous Hawk: Ferruginous Hawks have not been observed in the project study area, but it could potentially occur in the project study area while moving in or through the regional study area. Suitable habitats in the project study area include wet meadow, pasture cropland, and scrub. No direct impacts are anticipated to occur to individuals of this species as a result of project implementation. Alternative 4 would result in direct loss of some foraging habitat for this species near the I-15 Corridor. However, the existing disturbance from I-15 is likely to deter individual birds in the area from using much of this habitat. Loss of this habitat would likely result in minimal impact on foraging in the area, but it would contribute to the continuing regional cumulative loss of foraging habitat for this species. As with other transient birds that use the regional and project study areas, it is unlikely that loss of foraging habitat would affect the long-term viability of Ferruginous Hawks in the region.

Long-billed Curlew: Although breeding Long-billed Curlews have not been observed in the project study area, occurrences of migrants have been documented (Jones & Stokes 2005). They may forage in wet meadow and areas within scrub habitat. No direct impacts are anticipated to occur to individuals of this species as a result of project implementation. Alternative 4 would result in direct loss of some foraging habitat for this species near the highway corridor. However, the existing disturbance from I-15 is likely to deter individual birds in the area from using much of this habitat. Loss of this habitat would likely result in minimal effect on foraging in the area, but it would contribute to the continuing regional cumulative loss of foraging habitat for this species. As with other transient shorebirds that use the regional and project study areas, it is unlikely that loss of foraging habitat would affect the long-term viability of Long-billed Curlews in the region.

Burrowing Owl: Suitable habitat for Burrowing Owls occurs in the project study area, including pasture, cropland, scrub, urban fields, and freeway right-of-way. Burrowing Owls nest in crevices and burrows, especially those excavated by fox and badgers. They breed and forage primarily in pasture, scrub, and cropland habitats (along edges), as well as on dikes and islands in water impoundments. No direct impacts are anticipated to occur to individuals of this species as a result of project implementation. Alternative 4 would result in direct loss of some Burrowing Owl habitat near the I-15 corridor. However, the existing disturbance from I-15 would likely deter

individual birds in the area from using much of this habitat. Loss of this habitat would likely result in minimal effect on foraging in the area, but would contribute to the continuing regional cumulative loss of foraging habitat for this species. It is unlikely that loss of this habitat would affect the long-term viability of Burrowing Owls in the region.

Leatherside Chub: Leatherside chub historically occurred in the Provo River and American Fork River drainages, but has been extirpated from the Provo River. The I-15 Corridor crosses over the American Fork River. Construction activities could potentially impact the habitat quality of the river. However, stream management BMPs that will be implemented before and during construction will avoid any impacts to this habitat, and therefore no impacts to the leatherside chub are expected to occur.

Lewis's Woodpecker: Lewis's Woodpecker is an uncommon permanent resident in Utah, but has been functionally extirpated from much of its historical breeding range along the Wasatch Front. This species is a habitat specialist with primary breeding habitat in ponderosa pine and open riparian areas. Winter habitat includes open woodlands and lowland riparian areas. Construction of this alternative will remove some riparian habitat along the rivers and streams that are located in the project study area. This habitat loss and noise disturbance associated with construction and highway operation could potentially displace individual Lewis's Woodpeckers or pairs from the project study area. Loss of this habitat would likely result in minimal effect on foraging in the area, but it would contribute to the continuing regional cumulative loss of foraging habitat for this species. It is unlikely that loss of foraging habitat would affect the long-term viability of Lewis's Woodpecker in the region.

American White Pelican: American White Pelicans are summer visitors to the regional study area. No direct impacts are anticipated to occur to individuals of this species as a result of project implementation. Alternative 4 would result in direct loss of some potential open water foraging habitat for this species near the highway corridor. However, the existing disturbance from I-15 is likely to deter individual birds in the area from using much of this habitat. Loss of this habitat would likely result in minimal effect on foraging in the area, but it would contribute to the continuing regional cumulative loss of foraging habitat for this species. As with other transient shorebirds that use the regional and project study areas, it is unlikely that loss of foraging habitat would affect the long-term viability of American White Pelicans in the region.

Short-eared Owl: Short-eared Owls are uncommon breeders in the project study area. In the project study area, they are likely to be found in emergent marsh, wet meadow, pasture, cropland, and scrub habitats. No direct impacts are anticipated to occur to individuals of this species as a result of project implementation. Alternative 4 would result in direct loss of some Short-eared Owl habitat near the highway corridor. However, the existing disturbance from I-15 is likely to deter individual birds in the area from using much of this habitat. The direct impacts of this alternative would affect less than 0.1% of the overall extent of these habitats in the regional study area (Jones & Stokes 2005). Loss of this habitat would likely result in minimal effects, but it would contribute to the continuing regional cumulative loss of habitat for this species. It is unlikely that this loss of habitat would affect the long-term viability of Short-eared Owls in the region.

Western (Boreal) Toad: Several western toad populations existed historically along the Wasatch Front near Salt Lake City and Provo. These populations were likely extirpated as a result of development (Utah Division of Wildlife Resources 2006). Western toad populations currently occur in only 10 Utah counties: Box Elder, Cache, Rich, Wasatch, Summit, Sevier, Piute, Wayne, Garfield, and Kane (Thompson and Chase 2001; Thompson et al. 2003). Because of this distribution, implementation of Alternative 4 is not expected to affect this species.

Bobolink: In Utah, Bobolinks occur in low abundance in isolated groups, primarily in the northern half of the state. They have occasionally been observed in agricultural fields north of Salt Lake City, but they have not been documented in the project or regional study areas. Because of this distribution and local occurrence status, implementation of Alternative 4 is not expected to affect this species.

Grasshopper Sparrows: In Utah, Grasshopper Sparrows are primarily limited to the native grasslands located in the northernmost region of the state. Although suitable habitat for this species occurs within the project and regional study areas, the species has not been documented in those areas. Because of this distribution and local occurrence status, implementation of Alternative 4 is not expected to affect this species.

Bats: Like most arid-land bats, Townsend's big-eared bat, fringed myotis, and spotted bats take their insect prey during flight. For this reason, these aerial foragers are not tied to any specific habitats in the regional or project study area. No direct impacts are anticipated to occur to individuals of this species as a result of project implementation. Alternative 4 would result in direct loss of some potential open water foraging habitat for this species near the highway corridor. Loss of this habitat would likely result in minimal effect on foraging in the area, but it would contribute to the continuing regional cumulative loss of foraging habitat for this species. It is unlikely that this loss of foraging habitat would affect the long-term viability of bat species in the region.

Kit Fox: Utah Lake is located on the northeastern edge of the known distribution of kit fox (Zevellor and Collett 1988). Within their range, kit foxes are found in desert and semi-arid areas with flat shrub or shrub-grass communities and little ground cover. Because there is limited suitable habitat along the Wasatch Mountains in the vicinity of the project study area, kit foxes are considered extremely rare and have a low probability of occurring. Because of this occurrence status and the existing level of disturbance associated with I-15, Alternative 4 is not likely to affect this species.

**Table 3.15-2: Summary of Alternative 4 Impacts on
Threatened, Endangered, and Other Special-Status Species**

Species	Project Impact
Ute Ladies'-tresses	No direct effects to individuals of the species. Minimal direct effects to potential low quality habitat.
June Sucker	No direct effects to individuals or habitat are anticipated. Potential indirect effects may temporarily occur during construction. A BA has been prepared, and the concurrence letter is in Appendix A.
Bald Eagle*	No direct effects to individuals of the species. No direct or indirect effects to nesting habitat. Minimal direct effects to potential low quality foraging habitat at the Provo River.
Yellow-billed Cuckoo	No direct effects to individuals of the species. Minimal direct effects to potential low quality riparian habitat.
Northern Goshawk	No direct effects to individuals of the species. Minimal direct effects to potential low quality foraging habitat.
Columbia Spotted Frog	No direct effects to individuals of the species. Minimal direct effects to potential low quality riparian habitat.
Ferruginous Hawk	No direct effects to individuals of the species. Minimal direct effects to potential low quality foraging habitat.
Long-billed Curlew	No direct effects to individuals of the species. Minimal direct effects to potential low quality foraging habitat.
Burrowing Owl	No direct effects to individuals of the species. Minimal direct effects to potential low quality habitat.
Leatherside Chub	No effects likely due to planned stream management BMP implementation.
Lewis' Woodpecker	No direct effects to individuals of the species. Minimal direct effects to potential low quality riparian habitat.
American White Pelican	No direct effects to individuals of the species. Minimal direct effects to potential open water foraging habitat.

Table 3.15-2: Summary of Alternative 4 Impacts on
Threatened, Endangered, and Other Special-Status Species – continued

Species	Project Impact
Short-eared Owl	No direct effects to individuals of the species. Minimal direct effects to potential low quality habitat.
Western (Boreal) Toad	No effects likely.
Bobolink	No effects likely.
Grasshopper Sparrows	No effects likely.
Townsend's Big-Eared Bat	No direct effects to individuals of the species. Minimal direct effects to potential open water foraging habitat.
Fringed Myotis	No direct effects to individuals of the species. Minimal direct effects to potential open water foraging habitat.
Spotted Bat	No direct effects to individuals of the species. Minimal direct effects to potential open water foraging habitat.
Kit Fox	No direct effects to individuals of the species.

* USFWS published the removal of the Bald Eagle from the list of threatened and endangered species on July 9, 2007, in the Federal Register (72 FR 37346). USFWS will monitor the Bald Eagle population status for a minimum of 5 years after delisting, as required by the ESA. The Bald Eagle will continue to be protected under the MBTA and the BGEPA.

3.15.3.3 Comparison of Design Options

For Alternative 4, the impacts on wildlife and special status species, including their potential habitat, for Provo/Orem Option A are anticipated to be similar to Option B. These two options disturb more surface area adjacent to the existing I-15 as these options have a wider footprint to accommodate frontage roads. This wider footprint would disturb more roadside and urbanized wildlife habitat than Options C and D. The impacts on wildlife and special status species, and their potential habitat, for Provo/Orem Option C are anticipated to be similar to Option D.

The impacts on wildlife and special status species, including their potential habitat, for American Fork Main Street Interchange Options A, B, and C are anticipated to be similar.

The Preferred Alternative includes Option D in Provo/Orem and Option C in American Fork. Further details about the refinements made to the Preferred Alternative are located in Chapter 2.

3.15.4 Mitigation

The Preferred Alternative design components that will minimize or mitigate potential wildlife impacts include those listed below. BMPs and other mitigation measures used for federally listed species will limit potential impacts to other sensitive species as well. Avoidance, minimization, and mitigation measures will include the following:

- The landscape concept for the reconstructed I-15 will include low-maintenance, low-wildlife-forage-value plant materials to avoid attracting wildlife to the I-15 right-of-way;
- UDOT will coordinate with USFWS prior to construction to determine if updated presence/absence surveys of Ute ladies'-tresses are needed;

- As practical, UDOT will time tree and shrub removal to occur during the non-nesting season of migratory bird species (approximately September 1 – April 30). If this is not possible, UDOT will conduct preconstruction surveys to determine whether active nests are present; active nests found in the area should be left untouched until the young have fledged;
- Raptor nests within the range of disturbance of project activities (refer to the FWS *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* [2002]) will be surveyed prior to construction activity if the construction will occur during the nesting season. If an active raptor nest is identified, UDOT will coordinate with FWS and/or UDWR to determine appropriate buffer distances and duration given the species and nest location.
- If bridge reconstruction must occur during the swallow nesting period (approximately May to July), existing nests will be removed prior to nesting occurring, and deterrence devices (such as tarps, netting, or Bird-X gel) will be employed to deter nesting.
- Minimize removal of riparian vegetation, where possible. Replace vegetation along river corridors that are impacted by equipment or other construction activities with native riparian vegetation, where appropriate, rather than containerized stock.

June Sucker mitigation measures include the following:

- As practical, confine construction activities that could impact spawning June Sucker at the Provo River crossing, to the August 1 through March 31 time period. These months are outside the spawning period, and will largely avoid any potential for adverse impacts on June Sucker. Any construction at the river crossing during the spawning period will be coordinated with USFWS.
- If necessary to encroach on the stream channel of the Provo River, Hobbie Creek, or Spanish Fork River, temporary cofferdams will be installed outside the spawning period (April 1 through July 31) to enclose all construction activities to prevent escape of polluting sediments, oils, etc. All activities will be limited to the work areas created by the cofferdams.
- Construction activities in the Provo River, Spanish Fork River and Hobbie Creek will not encompass more than two consecutive spawning seasons.
- Construction activities that involve any disturbance to the river waters or associated drainages will attempt to avoid creation of isolated pools or stranding fish within microhabitats.
- Where isolated pools are formed, the Division of Wildlife Resources or qualified personnel approved by the USFWS will be contacted to seine and remove any entrapped June Sucker.
- The BMPs listed in Section 3.12, this appendix, and the Biological Assessment will also offer protection to the June Sucker.

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